

Listing of Claims:

Claims 1-52 (Canceled).

53. (New) An optical displacement sensor for measuring a displacement of a scale, wherein the scale is movable in a predetermined direction and includes a diffraction grating which has a predetermined period in a direction of the predetermined direction, said optical displacement sensor comprising:

a surface emitting laser light source for emitting a light beam to the diffraction grating such that a principal axis of the light beam is perpendicular to the direction of the predetermined direction and inclines at a predetermined angle relative to a line perpendicular to a surface of the diffraction grating within a plane perpendicular to the direction of the predetermined direction; and

a photosensor for detecting a specific portion of a diffraction interference pattern which is generated by interaction of the light beam and the diffraction grating, wherein the photosensor comprises a plurality of light detecting areas arranged at intervals of approximately

$$np1(z1 + z2)/z1$$

in a spatial period direction of the diffraction grating on the scale;

where:

z1 is an optical distance along the principal axis of
the light beam from a beam emitting surface of the
surface emitting laser light source to a scale
surface where the diffraction grating is formed;

z2 is an optical distance along the principal axis of
the light beam from the scale surface to the
photosensor;

p1 is a spatial period of the diffraction grating; and

n is a natural number;

wherein $z1 = z2$ and the surface emitting laser light source
and the photosensor are arranged on a same side of the scale; and

wherein the scale surface where the diffraction grating is
formed is parallel to a light receiving surface of the
photosensor.